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Three hundred and forty-second meeting.

January 29, 1851. — QUARTERLY MEETING.

The PRESIDENT in the chair.

The nomination list was taken up, and the following gentlemen were chosen Fellows of the Academy: —

Hon. George P. Marsh, of Vermont;

Rev. William Jenks, D. D., of Boston;

Prof. William A. Norton, of Brown University, R. I.;

Prof. Charles B. Hadduck, of Dartmouth College.

Professor Peirce stated that he had found the empirical correction of the theory of Saturn, which he communicated at the last meeting, to be confirmed by theory; and that the theoretical correction corresponded precisely in all its features with the empirical correction. This correction reconciles completely the discrepancy between the mass of Jupiter, as it is determined from its action upon its own satellites, and that which is derived from its action upon Saturn; and it now appears that this discrepancy did not arise from any error in the great inequality, but from one in the largest term of the periodical inequalities.

Mr. B. A. Gould, Jr. announced the death of Professor Schumacher, Director of the Altona Observatory, and Foreign Honorary Member of the Academy, and, on his motion, it was

" *Voted*, That a committee be appointed to prepare suitable resolutions, and address a letter of condolence to the family of the deceased.

" *Voted*, That Messrs. B. A. Gould, Jr., Peirce, and Bowen be that committee."

Three hundred and forty-third meeting.

February 4, 1851. — MONTHLY MEETING.

The PRESIDENT in the chair.

Professor Peirce, in behalf of the committee appointed at the last meeting on the occasion of the death of Professor Schumacher, a Foreign Honorary Member of the Academy, offered a series of resolutions expressive of the feelings of the Academy in relation to that event, which resolutions were unanimously adopted.

Professor Lovering stated that Part II. of Vol. IV. of the Memoirs of the Academy was published, and ready for delivery to the Fellows of the Academy, at their Library Hall.

Dr. C. T. Jackson communicated some interesting facts, showing that charcoal takes fire at a remarkably low temperature, which, when the charcoal is powdered and dry, he stated to be but little above that of boiling water. Dr. A. A. Hayes confirmed Dr. Jackson's statement, and referred to other similar facts. Dr. Holmes and Dr. W. F. Channing made further remarks on the same subject. The President spoke of the practical importance of an investigation of the subject; and, on motion of Mr. J. H. Abbot, made at his suggestion, it was

" *Voted*, That a committee be appointed to investigate the subject and report to the Academy.

" *Voted*, That Dr. C. T. Jackson, Dr. Hayes, and Dr. W. F. Channing be that committee."

Professor Peirce gave an argument, which he thought to be new, against the principle which is usually adopted in theoretical works, that the force of a body in motion is its *vis inertiæ*. He believes, on the contrary, that the time is at hand when the *vis viva* will be universally recognized as the force of a moving body. His new argument is derived from the effect of a force in causing rotation, as well as translation. By the old theory, no additional force is required to produce rotation ; whereas, by the theory of the *vis viva*, just as much force is required as is actually exhibited in the resulting rotation. The same argument may be derived in another form from the vibrations of elastic bodies.

Mr. Peirce also gave some new views upon the subject of friction, and especially discussed the theory of rolling friction. This theory is of very little practical importance, but it is annoying to a scientist not to have it correctly established.

The careful consideration of this subject seems also to be well adapted to throw light upon some of the more hidden questions of practical mechanics. The principles upon which his theory was based are, that the whole amount of resistance is measured by the amount of change of form, of compression, or of vibration with which the rolling surfaces are left; and these are themselves dependent upon the nature of the surfaces as yielding or hard, elastic or inelastic, and upon the amount of pressure and the extent of the surface of contact.

The subject was further discussed by Mr. C. Jackson, Jr., Mr. Treadwell, and the President. Mr. Treadwell concurred with Professor Peirce in his views, except that he was inclined to attribute the loss of force, in the case of elastic bodies, rather to the slow recovery by the particles of their previous position, than to their vibrations.

Dr. Holmes exhibited the peculiar bone corpuscles shown and described by him to the Boston Society for Medical Improvement in the year 1847, together with one of the drawings of them taken at the same period, by Mr. McIlvaine, under his direction. These corpuscles, remarkable for their regular, sharply defined, and often yellowish nucleus, are found in the cancellated structure of human bones. They are identical with those described by M. Robin in the *Gazette Médicale* for December 22, 1849, under the name of medullary cells.

Professor Peirce referred to a paper on the subject of heat, formerly prepared by Mr. U. A. Boyden, and expressed a desire that it might receive the attention of the Rumford Committee.

Three hundred and forty-fourth meeting.

March 4, 1851. — MONTHLY MEETING.

The PRESIDENT in the chair.

Professor Peirce made some remarks respecting the name to be assigned to the new planet, and thought it should be called Clio, rather than Victoria.,